

JOINT VIET NAM - RUSSIAN LAB FOR MARINE GEOSCIENCES AND TECHNOLOGY (IMGG VAST-POI FEB RAS): SCIENTIFIC ACTIVITY

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Abstract: Important results already obtained in gasgeochemistry and geophysics, and also paleoceanology (provided by prof. Gorbarenko S.A., POI FEB RAS). The valuable data set of deep structure, tectonics and hydrocarbons currently processed and analyzed. During joint activity since 2010 more than 10 international conferences were subjected to joint scientific development (mainly organized by Vietnamese institutions). Joint manuscripts to the international peer reviewed editions are preparing. Thus, joint complex geological and geophysical cooperation for offshore and onland projects successfully initiated. But joint lab and projects still needs funding support both sides. For the further successful development of studies related to hydrocarbons and ecology of East Sea of VietNam we also propose to invite research group from Petroleum Microbiology department of Institute of Biochemistry VAST.

Also, we all need a research vessel for the deep water studies.

Introduction

Joint Vietnam-Russia Laboratory for Marine Geosciences and Technology (LMG) is founded by the Institute for Marine Geology and Geophysics (IMGG), Vietnam Academy of Science and Technology (VAST) and V.I. Il'ichev Pacific Oceanological Institute (POI) of the Far Eastern Branch, Russian Academy of Sciences (POI FEB RAS) in 2010.

The activity of LMG is based on: 1) Memorandum of Understanding on Cooperation between the Institute for Marine Geology and Geophysics (IMGG) Vietnam Academy of Science and Technology (VAST) and V.I. Il'ichev Pacific Oceanological Institute (POI) Far Eastern Branch of Russian Academy of Sciences (May 15, 2009); 2) Agreement on establishing a Coordination Center for scientific and technical cooperation between the FEBRAS and VAST (March 09, 2010); 3) AGREEMENT about joint scientific researches to carry out joint research program in gasgeochemical and environmental study onshore and offshore in Socialist Republic of Vietnam (2011-2015); 4) STATEMENT of Joint Vietnam-Russia Laboratory for Marine Geosciences and technology founded by Institute of Marine Geology and Geophysics (IMGG), Vietnam Academy of Science and Technology (VAST) (April 23, 2010).

The main purposes of LMG is Initiation of cooperation to develop basic science and technology research in marine geology, geophysics, oceanography

and environment and Approval and promotion of the cooperation and communication allowing exchange of academic and scientific knowledge.

Areas of research (started and proposed):

- Gasgeochemical investigation for oil-gas and gashydrates, ecology status and seismic tectonic activity;
- Geological and geophysical investigation of deep structure, geodynamic and natural resources in the East Sea of Vietnam;
- Investigation of deep criteria of the geodynamics activity and location of mineral resources in the coastal area of Vietnam based on magneto-telluric, gravimetric and seismic methods;
- Investigation of sediment geochemistry and ore formation in the East Sea of Vietnam sedimentary basin;
- Investigation of terrestrial material flows and their role in continental shelf sedimentation in the East Sea of Vietnam;
- Lithology and mineralogy manifestations of gas-fluid emanations and gashydrates on the floor of East Sea of Vietnam;
- Paleooceanological research;
- Oceanology and development of oceanographic databases for SCS (waters of Vietnam).

Forms of Cooperation

- Exchange of scientific information in field of mutual interest;
- Holding joint lectures, talks, conferences, training courses and sharing of experience;
- Organization of joint field and marine expeditions;
- Designing and implementing cooperative research programs.

Facilities: Joint Lab Office and nice hostel for Russian scientists – participants of joint research activity were created by Director Dr. Phung Van Phach in IMGG.

Budget for running LMG will come from different sources, such as projects, contracts funded by the governments of Vietnam and Russia, join-venture or foreigner companies and international organizations, collaborative research grants from RFBR, VAST, FEB RAS, and others. Many mutual visits were implemented for the logistics of joint collaboration (Fig. 1).

CURRENT JOINT PROJECTS

For the initial stage of cooperation 3 projects was organized to study around Hanoi Basin, Red River mouth and Gulf of Tonkin:

1. Russian Fund of Basic Research (Russian Federation) – Ministry of Science and Technology (Socialist Republic o Vietnam). Title: STUDY ON HYDROCARBON GAS-GEOCHEMICAL FIELDS AND GEODINAMICS IN THE GULF OF TONKIN, VIETNAM: IMPLICATION FOR HYDROCARBON RESOURCES AND TECTONICS. NK 13-05-93000/13. Duration: 2013-2014.

Head of project from Vietnamese site: Dr. Nguyễn Nh Trung, Institute of Marine Geology and Geophysics, VAST. + Website: www.imgg.com.vn; + Address: 18 Hoang Quoc Viet, Cau Giay, Hanoi + Fax: +84 04 37561647 + Email: imgg@imgg.com.vn



Figure 1. Director of IMG VAST Dr. Phùng Văn Phách in the Gasgeochemistry lab of POI FEB RAS (upper photo) and young scientist Le Đức Anh learn experience of gasgeochemical equipment (low photo).

Head of the project from Russian site: Dr. Shakirov Renat. V.I. Il'ichev Pacific Oceanological Institute Far Eastern Branch, Russian Academy of Sciences.

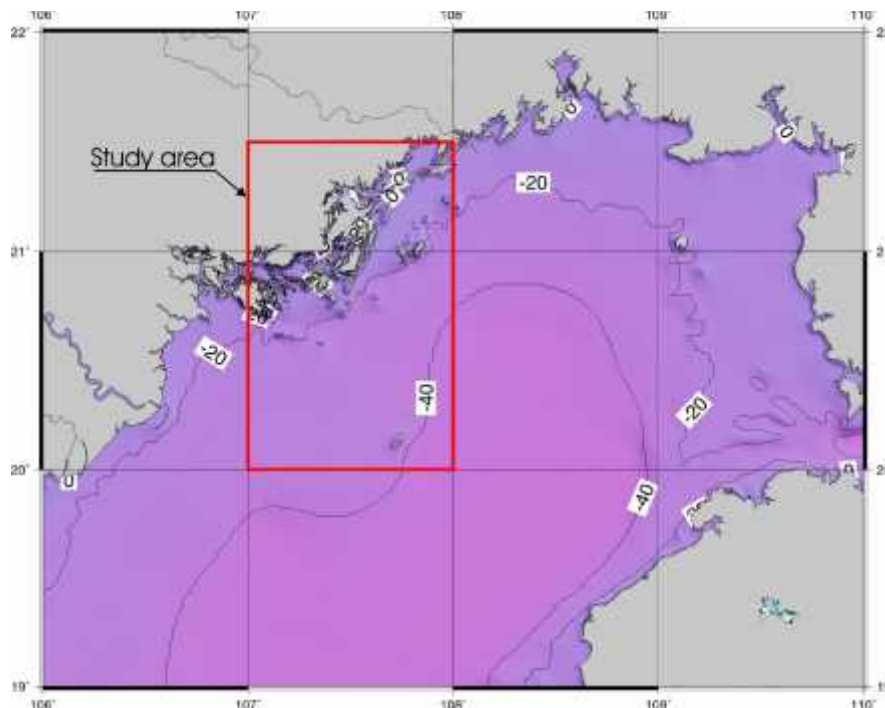


Figure 2. Location of study area Gulf of Tonkin. 2013.

At present time first important results in geology and geophysics in frame of Joint Laboratory are obtained and concrete projects started as follows:

Preliminary gasgeochemistry and seismic results are obtained during the marine expedition in 2013. 97 stations of sediment and water sampling on 6 profiles were conducted in the north-west of BacBo (Fig. 1). Helium, hydrogen, methane, hydrocarbon gases, nitrogen, carbon dioxide, oxygen were analyzed in sediments and sea water. Methane (up to 370 nMol/kg) and hydrocarbon gases (ethane, propane, and butane) were found in the sediments in valuable concentrations, as well as helium (20 ppm average) and hydrogen (up to 100 ppm) content indicates certain geological features. Some of carbon dioxide and methane dissolved in sea water show their abnormal distribution. The relations of gases (gasgeochemical coefficients) reflect geological structures and ecology state of study area. In case of increasing CO₂ content in sea water – it can cause slight dissolving a carbonate islands. Permeability zones in the area also provide the greenhouse gases slight emission (methane-carbon dioxide) from interior into the atmosphere, but this still under processing.

2. Project "GENERAL INVESTIGATION ON GEOLOGICAL AND GEODYNAMIC CONDITIONS AIMS AT PLANNING ECONOMICAL DEVELOPMENT IN THE NORTH OF GULF OF TONKIN" (KC.09.09). 2013-2014. Head of project: Nguyen Nh Trung.

This is a Vietnamese research project funded by MOST, Viet Nam. The project is concentrated on geodynamics and tectonic study of the BacBo area based on comprehensive seismic, magnetic, gravity and geoelectricity methods. New effective tectonic pattern is currently elaborating by Vietnamese scientists. A

scientific gasgeochemical group from POI FEB RAS was invited to study gas features related to tectonics and other. New important results were obtained on young faulting in BacBoc and others under processing during field season 2013.

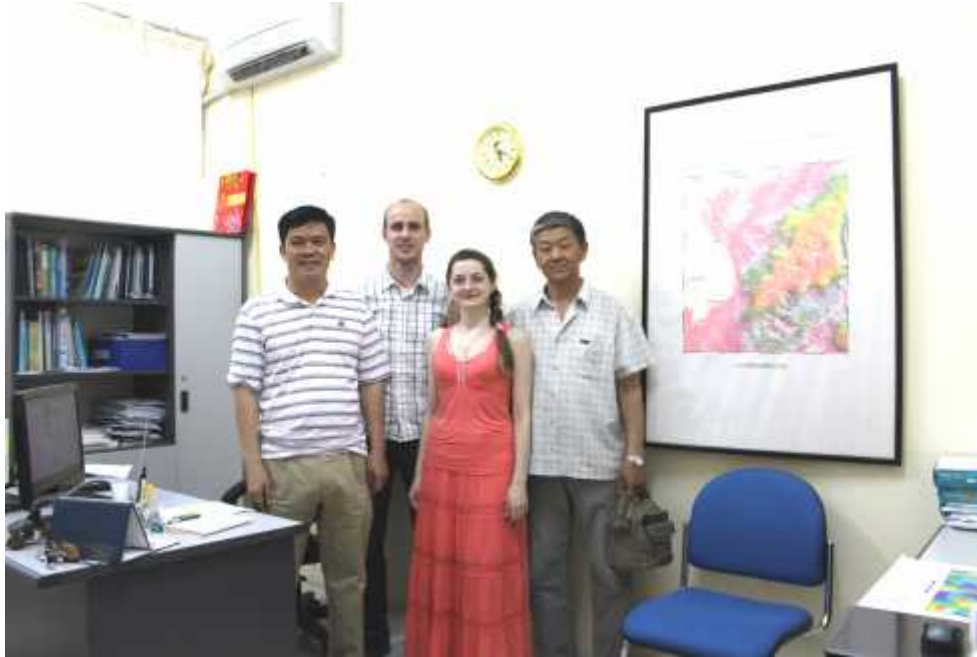


Figure 3. Head of project: Dr. Nguyen Nhu Trung (IMGG VAST), Iurii Telegin (POI), Elena Mal'tseva (POI) and Iosif Iugai (POI) before start of joint sea expedition in BacBo 2013.

In scope of these 2 projects the sediment and water sampling and gas extraction equipment were installed in IMGG VAST by POI FEB RAS together with young scientists from IMGG VAST (Fig.3).

3. Study of deep structure and geophysical criteria of hydrocarbons distribution in the Hanoi Basin of VietNam. 12-05-93006- _ . Duration: 2012 -2013. Head of project (POI FEB RAS) Dr. Nikiforov V.M.

During 2012 the comprehensive magneto-telluric method was applied in the BacBo area and unique information of deep structure was obtained. In the 2013 second survey will conducted. Before that complicated electric tomography results were obtained also in the RedRiver low current area.

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